

# OPERATING SUMMARY

VILLAGE OF

# EGANVILLE

WATER POLLUTION CONTROL PLANT and  
WATER SUPPLY SYSTEM

TD227  
E47  
W38  
1974  
MOE

c.1  
a aa

LABORATORY & RESEARCH LIBRARY  
MINISTRY OF THE ENVIRONMENT

LIBRARY COPY

OCT 20 1975

MINISTRY OF THE  
ENVIRONMENT

LAB

1  
9  
7  
4

### Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at [copyright@ontario.ca](mailto:copyright@ontario.ca)



*Environment Ontario*  
Laboratory Library  
125 Resources Rd.  
Etobicoke, Ontario M9P 3V6  
Canada



Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER  
Honourable William G. Newman

DEPUTY MINISTER  
E. Biggs

ASSISTANT DEPUTY MINISTER  
REGIONAL OPERATIONS  
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHEASTERN REGION  
C. E. McIntyre

MANAGER, UTILITY OPERATIONS  
A. Symmonds

EGANVILLE  
WATER POLLUTION CONTROL PLANT  
and  
WATER SUPPLY SYSTEM

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

TD 227

E47

W38

1974

MOE

asnn

# CONTENTS

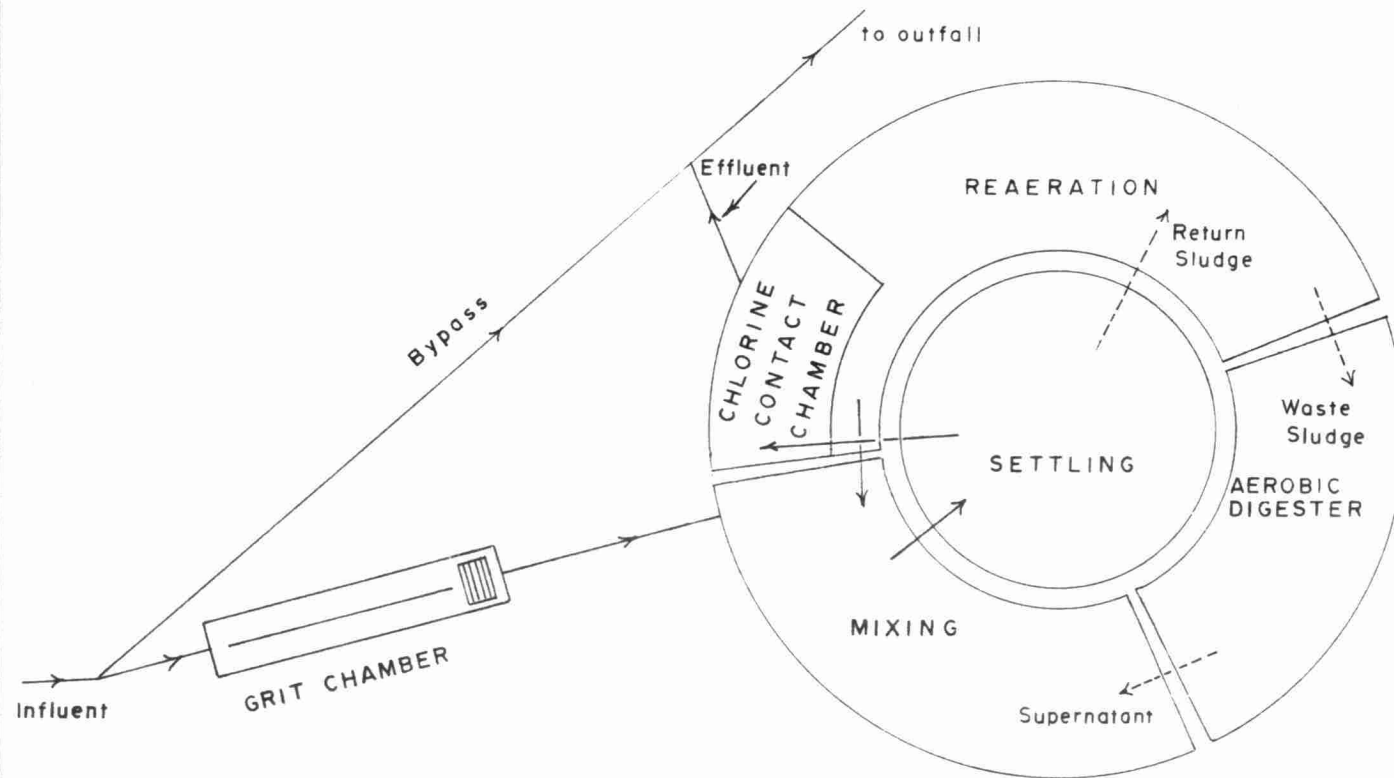
## WATER POLLUTION CONTROL PLANT

|                          |    |
|--------------------------|----|
| Flow Diagram . . . . .   | 6  |
| Design Data . . . . .    | 7  |
| Operating Cost . . . . . | 8  |
| Process Data . . . . .   | 10 |

## WATER TREATMENT PLANT

|                          |    |
|--------------------------|----|
| Flow Diagram . . . . .   | 18 |
| Design Data . . . . .    | 19 |
| Operating Cost . . . . . | 20 |
| Process Data . . . . .   | 22 |

## WATER POLLUTION CONTROL PLANT



EGANVILLE  
WATER POLLUTION CONTROL PLANT

# DESIGN DATA

PROJECT Village of Eganville  
WPCP

PROJECT NO. 1-0007-66

TREATMENT Extended Aeration

DESIGN FLOW 0.168 mgd

BOD - Raw Sewage  
- Domestic 182 mg/l  
- Creamery 154 mg/l

Removal 80%

## PRIMARY TREATMENT

### Grit Removal

Type: Parallel channels, manually  
cleaned  
Size: Two 17'4" x 1'2"

### SCREENING

Type: Manually cleaned  
Size: 1 $\frac{1}{4}$ " openings

### COMMINUTION

Type: Aer-o-Flow Type A-12

## SECONDARY TREATMENT

### Aeration Tanks

Type: Diffused air  
Size: 83,400 gal  
Retention: 12 hours

### Air Supply

Type: Dresser type RAI  
Size: Three-340 scfm @ 7 psi

## SECONDARY SEDIMENTATION

Size: 25'8" dia x 15' (37,500 gal)  
Retention: 5.3 hours  
Loading: Surface 388 gal/ft<sup>2</sup>/day  
Weir: 1170 gal/ft/day

## CHLORINATION

Type: Wallace & Tiernan Type 831  
Size: 20 lbs/day

### Chlorine Contact Chamber

Size: 3900 gal  
Retention: 30 minutes

## OUTFALL

## OUTFALL

- to Bonnechere River

## SLUDGE HANDLING

### Digestion System

Type: Aerobic  
Size: 56,000 gal

## PUMPING STATIONS

### North Side

Two Flygt Model CP-3100, 350 US  
gpm @ 35' TDH

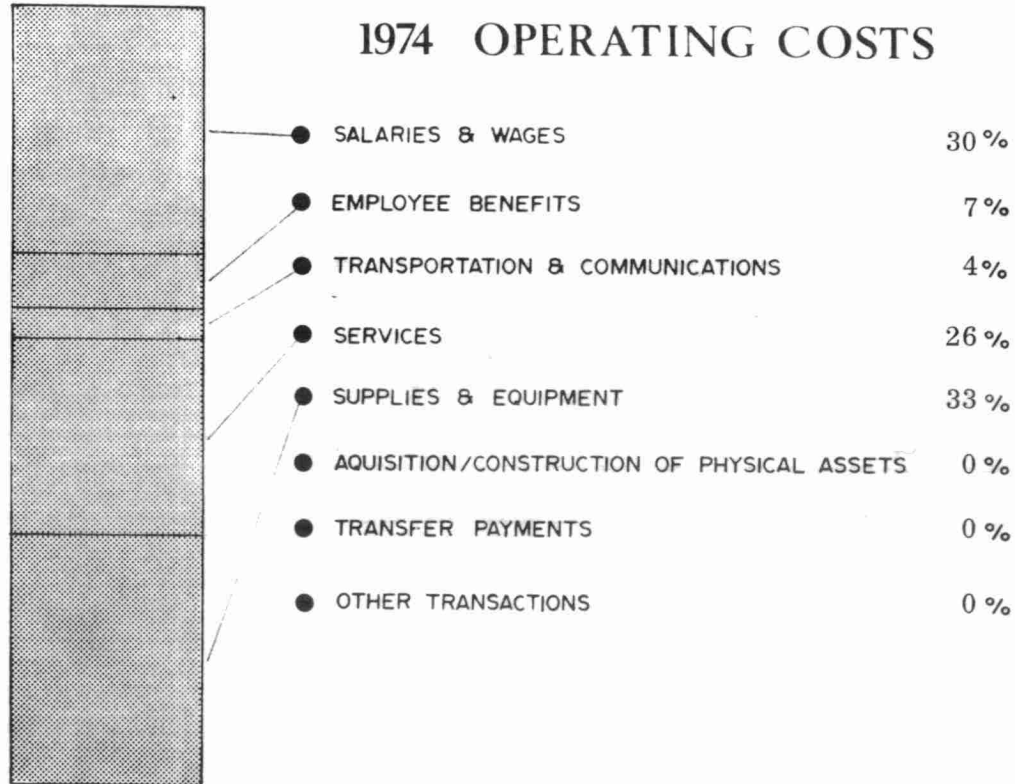
### Water Street

Two Flygt Model CP-3100, 150 US  
gpm @ 25' TDH



# ANNUAL COSTS

## 1974 OPERATING COSTS



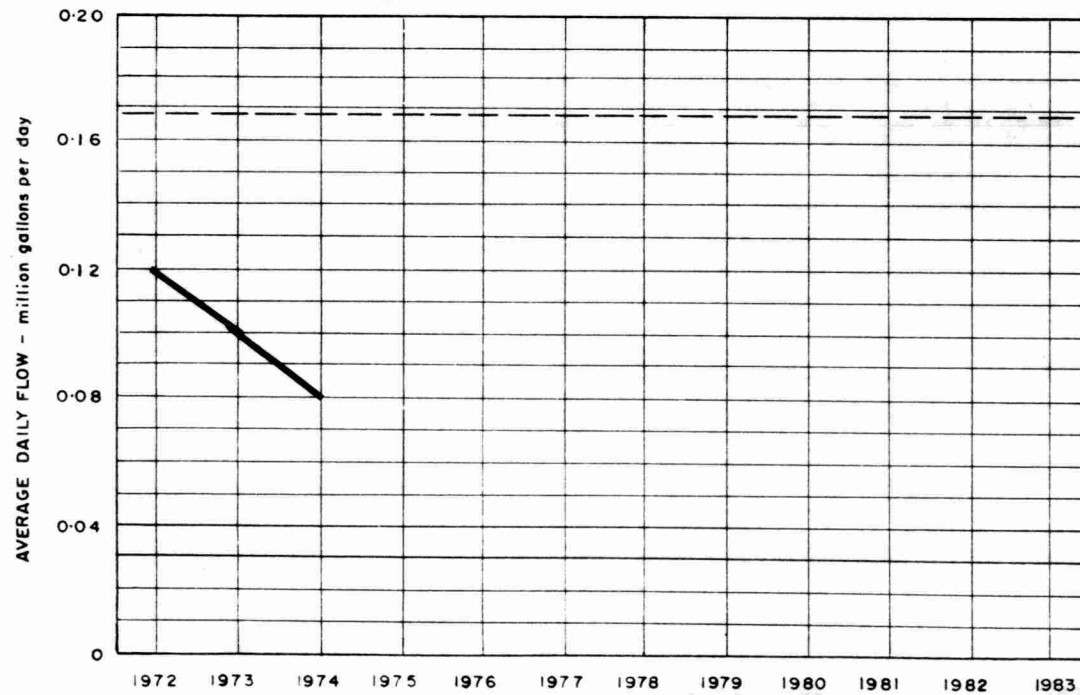
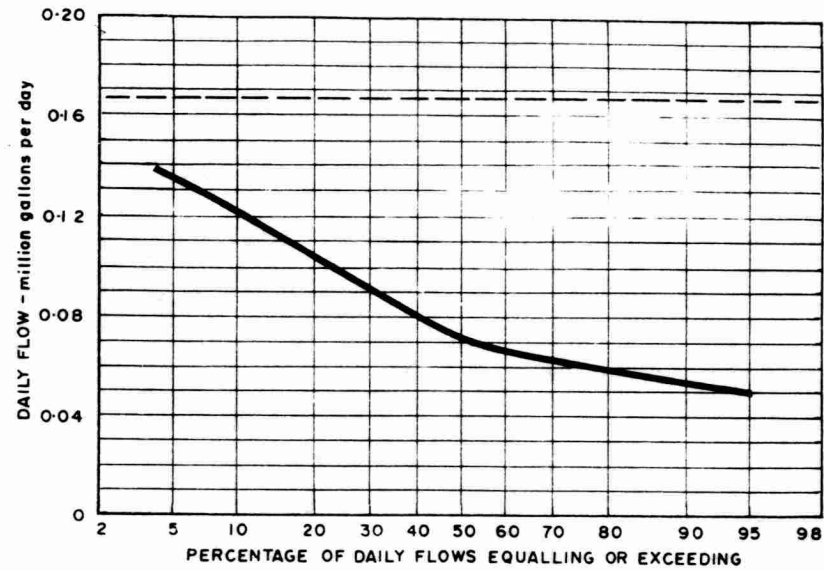
## YEARLY OPERATING COSTS

| YEAR | SEWAGE TREATED<br>in million gallons | TOTAL<br>OPERATING COSTS | UNIT COSTS |          |
|------|--------------------------------------|--------------------------|------------|----------|
|      |                                      |                          | \$/M.G.    | ¢/lb BOD |
| 1974 | 28.5                                 | 31930                    | 1120       | 7        |

# OPERATING EXPENDITURES

|  |             |          |
|--|-------------|----------|
| Regular Staff                                    | \$ 9675     | \$       |
| Casual (Unclassified) Staff                      |             |          |
| TOTAL SALARIES AND WAGES                         |             | 9675     |
| TOTAL EMPLOYEE BENEFITS                          |             | 2226     |
| TOTAL TRANSPORTATION AND COMMUNICATIONS          |             | 1399     |
| Insurance  | 197         |          |
| Sludge Haulage                                   | 4608        |          |
| Repairs and Maintenance                          | 1143        |          |
| Other Services                                   | 2206        |          |
| TOTAL SERVICES                                   |             | 8154     |
| Machinery and Equipment                          | 1500        |          |
| Chemicals  | 529         |          |
| Utilities  | 3911        |          |
| Other Supplies and Equipment                     | 4532        |          |
| TOTAL SUPPLIES AND EQUIPMENT                     |             | 10472    |
| TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS |             |          |
| TOTAL TRANSFER PAYMENTS                          |             |          |
| OTHER TRANSACTIONS                               |             | 4        |
| GRAND TOTAL                                      | GRAND TOTAL | \$ 31930 |

# PROCESS DATA FLOWS

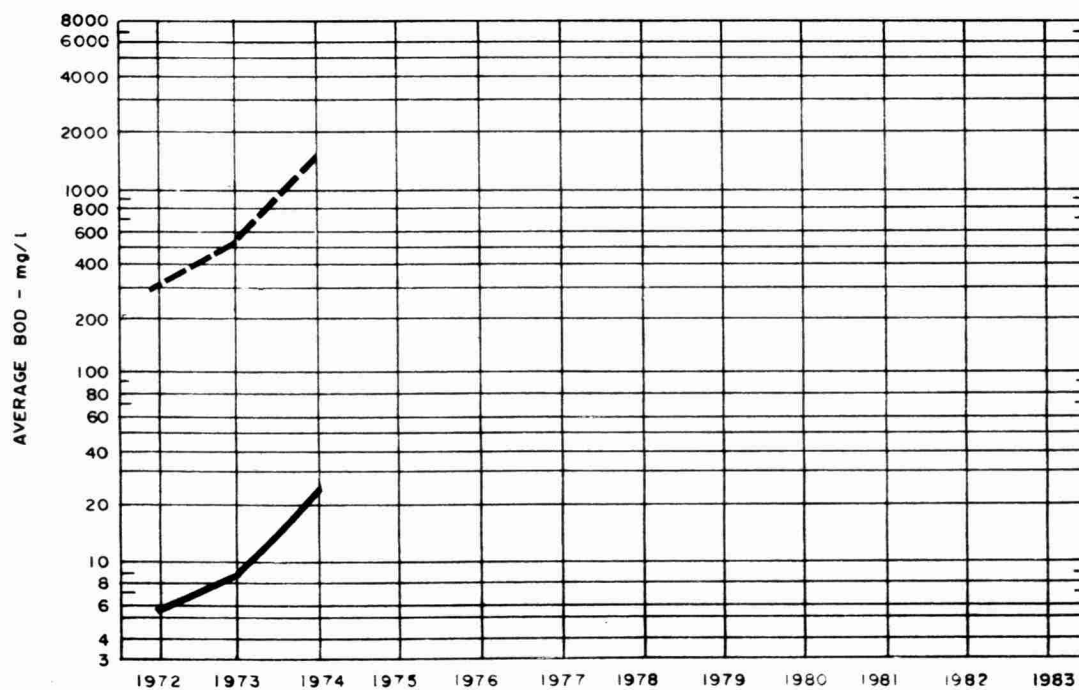
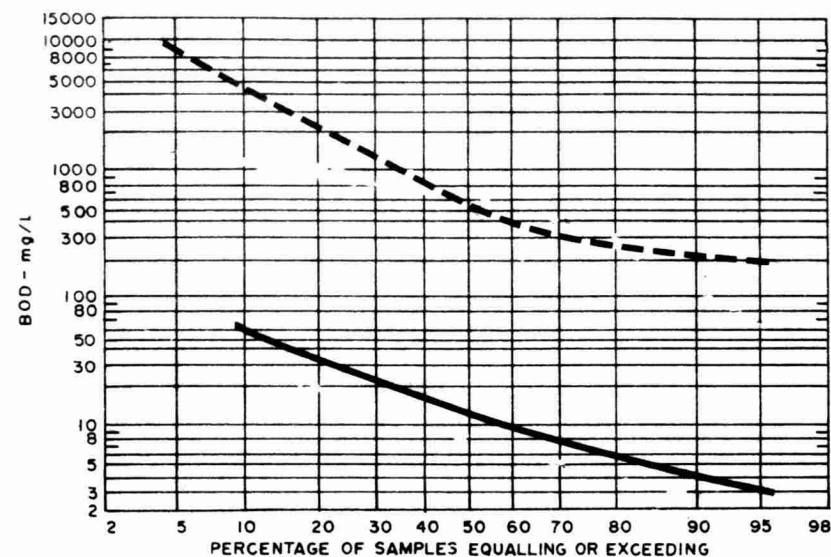


DESIGN CAPACITY - - - - -

# PLANT PERFORMANCE

| MONTH          | FLOWS           |             |                | BIOCHEMICAL OXYGEN DEMAND |          |           |                        | SUSPENDED SOLIDS |          |           |                        | PHOSPHORUS |          |
|----------------|-----------------|-------------|----------------|---------------------------|----------|-----------|------------------------|------------------|----------|-----------|------------------------|------------|----------|
|                | TOTAL FLOW      | AVERAGE DAY | MAXIMUM DAY    | INFLUENT                  | EFFLUENT | REDUCTION |                        | INFLUENT         | EFFLUENT | REDUCTION |                        | INFLUENT   | EFFLUENT |
|                | million gallons | mil. gal    | mgd            | mg/l                      | mg/l     | %         | 10 <sup>3</sup> pounds | mg/l             | mg/l     | %         | 10 <sup>3</sup> pounds | mg/l P     | mg/l P   |
| JAN            | 2.00            | .07         | .09            | 430                       | 16       | 96        | 8.3                    | 250              | 25       | 90        | 5.0                    | 10.8       | 4.3      |
| FEB            | 2.02            | .07         | .09            | 550                       | 13       | 98        | 10.8                   | 255              | 18       | 93        | 4.8                    | 7.0        | 3.3      |
| MAR            | 2.60            | .08         | .11            | 5044                      | 19       | 99+       | 130.7                  | 2452             | -        | -         | -                      | 8.8        | 5.5      |
| APR            | 3.53            | .12         | .14            | 5846                      | <10      | 99+       | 204.0                  | 4156             | 10       | 99+       | 146.3                  | 12.5       | 2.0      |
| MAY            | 3.93            | .13         | .16            | 2714                      | 40       | 99        | 105.1                  | 1095             | <15      | 99        | 42.4                   | 4.8        | 2.3      |
| JUNE           | 2.68            | .09         | .11            | 600                       | 57       | 90        | 14.5                   | 310              | <15      | 95        | 7.9                    | 5.5        | 3.6      |
| JULY           | 2.05            | .07         | .08            | 331                       | 7        | 98        | 6.8                    | 295              | -        | -         | -                      | 6.9        | 3.0      |
| AUG            | 1.86            | .06         | .07            | 850                       | 6        | 99        | 16.0                   | 430              | <15      | 97        | 7.9                    | 10.0       | 6.0      |
| SEPT           | 2.06            | .07         | .08            | 505                       | 8        | 99        | 10.2                   | 390              | 18       | 95        | 7.7                    | 10.3       | 1.3      |
| OCT            | 1.85            | .06         | .08            | 605                       | 101      | 83        | 9.6                    | 500              | 92       | 82        | 7.7                    | 8.5        | 6.8      |
| NOV            | 1.92            | .06         | .09            | 418                       | 10       | 98        | 7.8                    | 225              | 15       | 93        | 4.0                    | 6.4        | 2.8      |
| DEC            | 2.04            | .07         | .08            | 251                       | 3        | 99        | 5.0                    | 195              | 15       | 92        | 3.7                    | 6.4        | 3.1      |
| TOTAL          | 28.54           | -           | -              | -                         | -        | -         | 464.8                  | -                | -        | -         | -                      | -          | -        |
| AVG.           |                 | .08         | MAXIMUM<br>.16 | 1657                      | 26       | 98        | 38.7                   | 1370             | 25       | 98        | 31.9                   | 8.5        | 3.7      |
| No. of Samples | -               | -           | -              | 46                        | 22       | -         | -                      | 30               | 18       | -         | -                      | 25         | 22       |

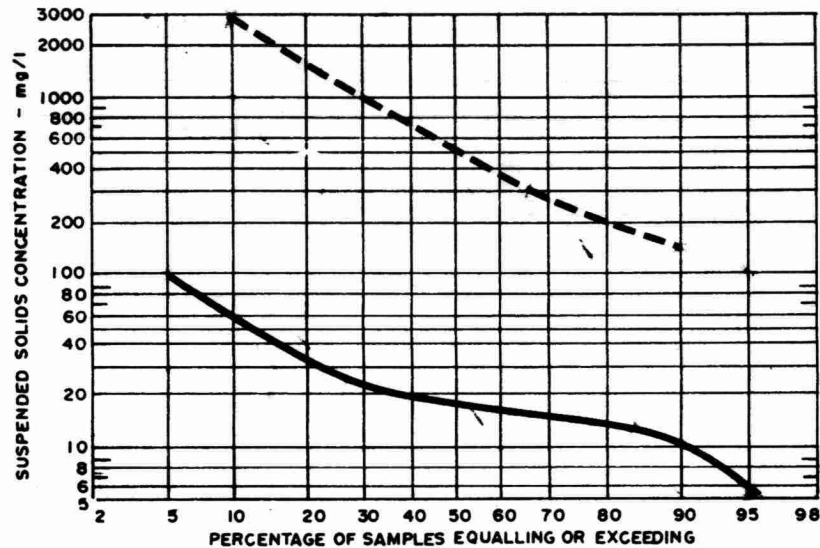
# BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT    - - - - -

PLANT EFFLUENT    —————

# SUSPENDED SOLIDS

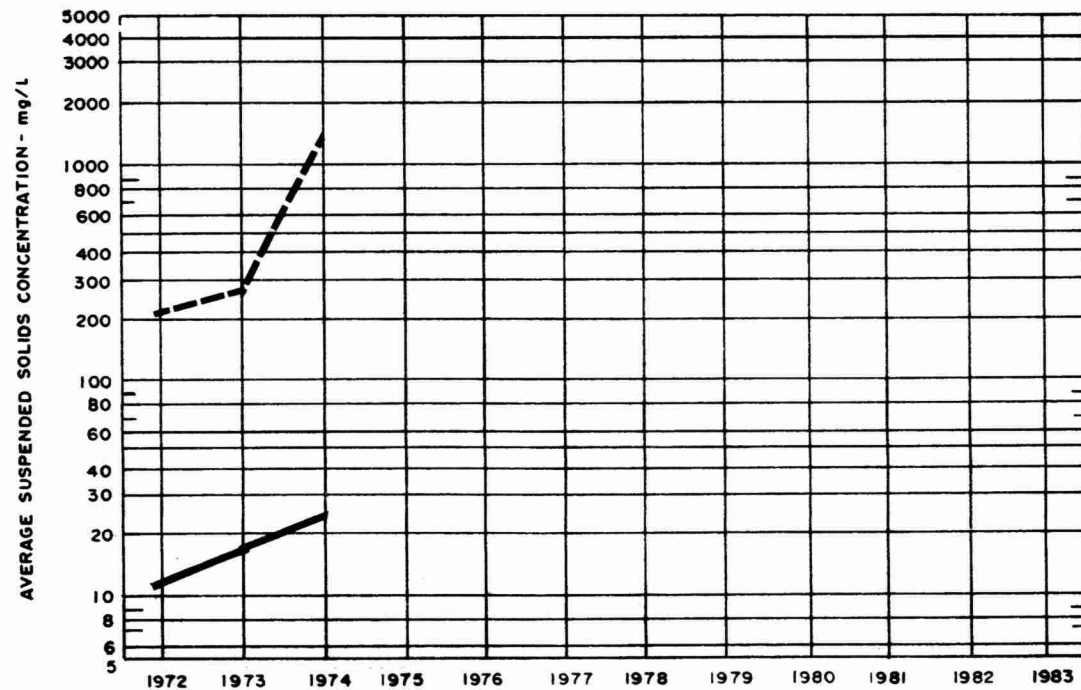


PLANT INFLUENT

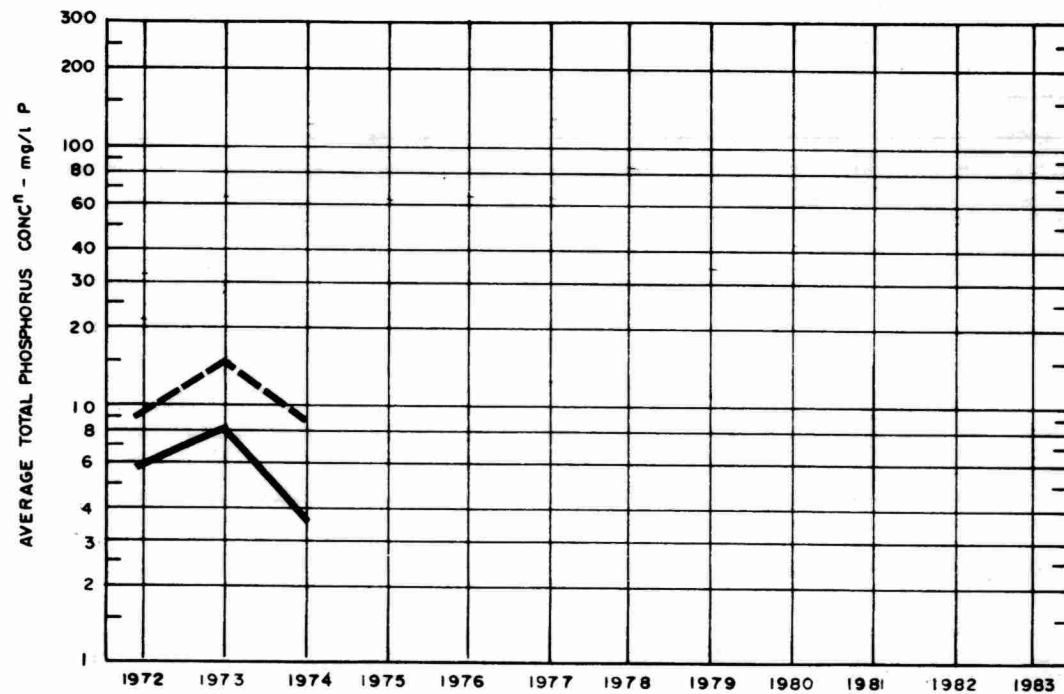
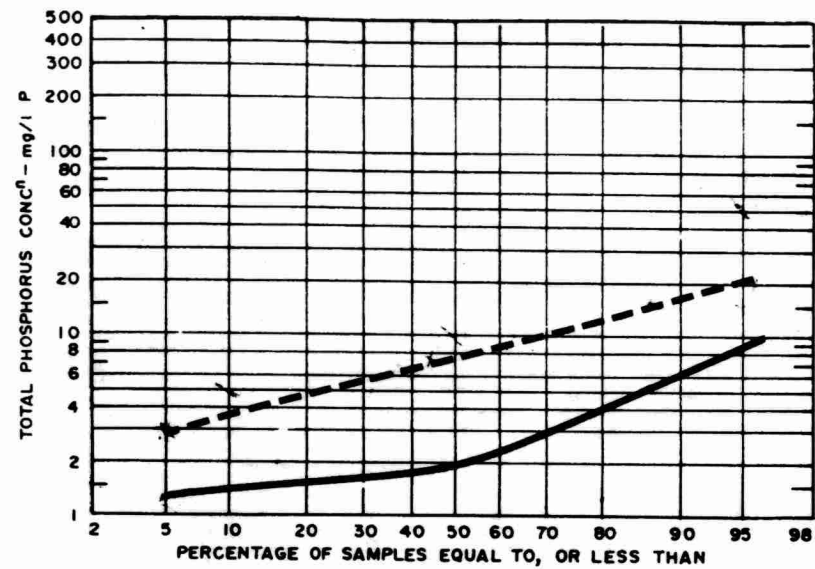
---

PLANT EFFLUENT

—



# PHOSPHORUS



PLANT INFLUENT -----

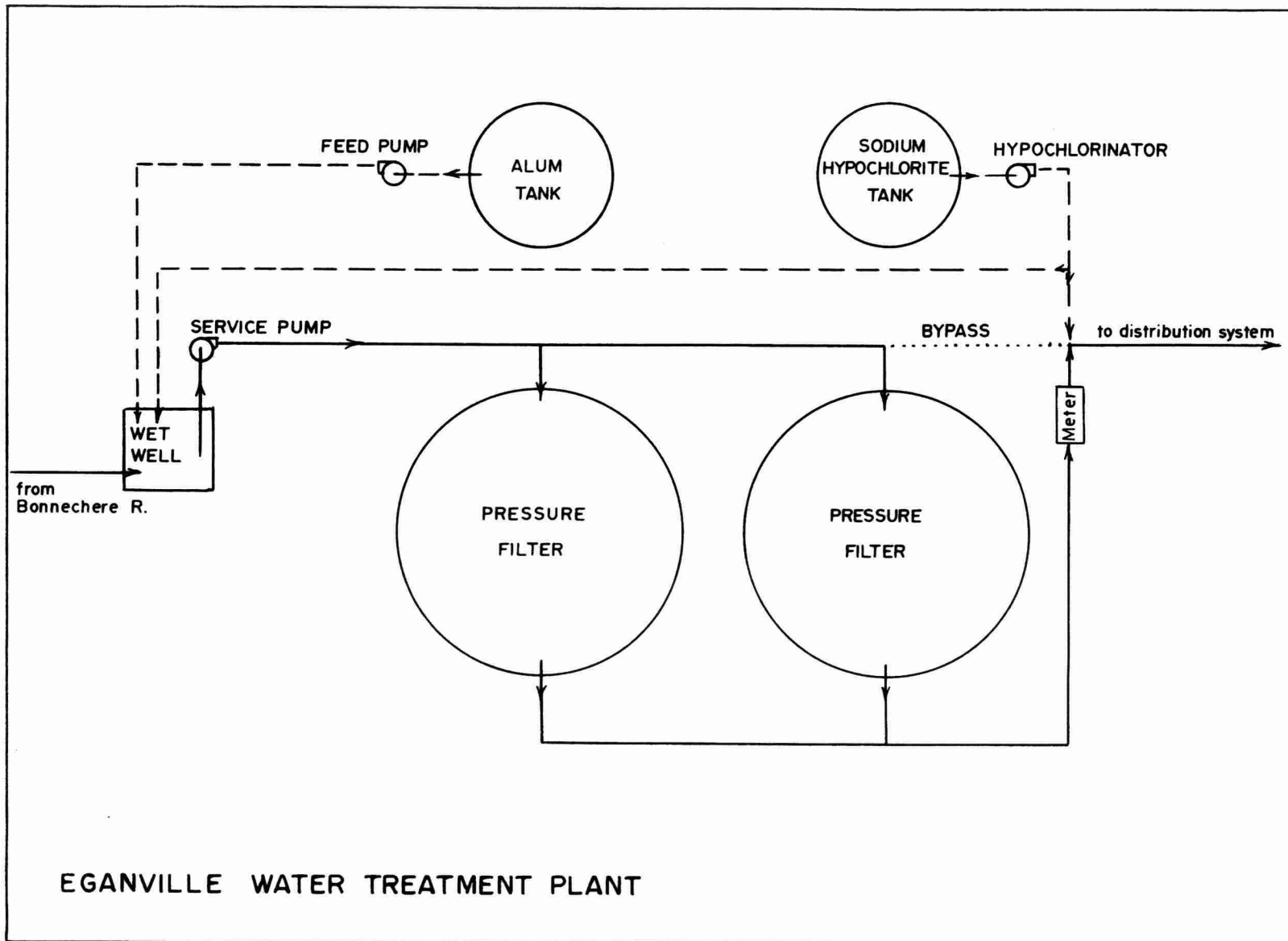
PLANT EFFLUENT —————

## TREATMENT DATA

| MONTH | GRIT                  | CHLORINATION         |             | AERATION   |                   |   | WASTE SLUDGE |                  |             | AEROBIC DIGESTER        |                  |             |               |
|-------|-----------------------|----------------------|-------------|------------|-------------------|---|--------------|------------------|-------------|-------------------------|------------------|-------------|---------------|
|       | QUANTITY REMOVED      | CL <sub>2</sub> USED | AVG. DOSAGE | MLSS. CONC | F/M               | AIR USED                                | QUANTITY     | SUSPENDED SOLIDS | VOL. SOLIDS | QUANTITY REMOVED        | SUSPENDED SOLIDS | VOL. SOLIDS | AMOUNT HAULED |
|       | cubic feet            | pounds               | mg/l        | mg/l       | day <sup>-1</sup> | $\frac{1000 \text{ ft}}{\text{lb BOD}}$ | 10 gallons   | mg/l             | %           | 10 <sup>3</sup> gallons | mg/l             | %           | cubic yards   |
| JAN   | 8                     | 159                  | 8.0         | 5600       | .04               | -                                       | -            | 6500             |             | 1.3                     | 9800             |             | 8             |
| FEB   | 6                     | 138                  | 6.8         | 3600       | .08               | -                                       | -            | 5800             |             | 21.0                    | 8800             |             | 125           |
| MAR   | 9                     | 160                  | 6.1         | 4200       | .71               | -                                       | -            | 9300             |             | 12.0                    | 10000            |             | 71            |
| APR   | 10                    | 159                  | 4.5         | 3200       | 1.63              | -                                       | -            | 8700             |             | 16.3                    | 14000            |             | 97            |
| MAY   | 18                    | 186                  | 4.7         | 3900       | .67               | -                                       | -            | 9300             |             | 14.0                    | 19000            |             | 77            |
| JUNE  | 11                    | 150                  | 5.6         | 3900       | .10               | -                                       | -            | 6400             |             | 35.0                    | 11000            |             | 208           |
| JULY  | 15                    | 153                  | 7.5         | 3400       | .05               | -                                       | -            | 4000             |             | 31.0                    | -                |             | 184           |
| AUG   | 14                    | 145                  | 7.8         | 2700       | .13               | -                                       | -            | 8500             |             | 68.0                    | 14000            |             | 403           |
| SEPT  | 11                    | 149                  | 7.2         | 3600       | .07               | -                                       | -            | 5300             |             | 46.0                    | 11000            |             | 273           |
| OCT.  | 15                    | 139                  | 7.6         | 3500       | .08               | -                                       | -            | 4500             |             | 57.0                    | 15000            |             | 338           |
| NOV   | 10                    | 115                  | 7.8         | 3500       | .05               | -                                       | -            | 4700             |             | 30.3                    | 11000            |             | 180           |
| DEC   | 7                     | -                    | -           | 3200       | .04               | -                                       | -            | 5400             |             | 33.0                    | 18000            |             | 196           |
| TOTAL | 134                   | 1653                 | -           | -          | -                 | -                                       |              | -                | -           | 363.9                   | -                | -           | 2160          |
| AVG.  | 4.7<br>cu. ft/mil gal | 150                  | 5.8         | 3700       | .30               |   |              | 6500             |             | 30.3                    | 13000            |             | 180           |



## **WATER SUPPLY SYSTEM**



## DESIGN DATA

PROJECT Village of Eganville WPCP

PROJECT NO. 6-0093-61

TREATMENT Coagulation and Filtration

### FILTERS

Type: Pressure, sand.

Size: 84 inch dia

### SOURCE

- Bonnechere River

### DISTRIBUTION

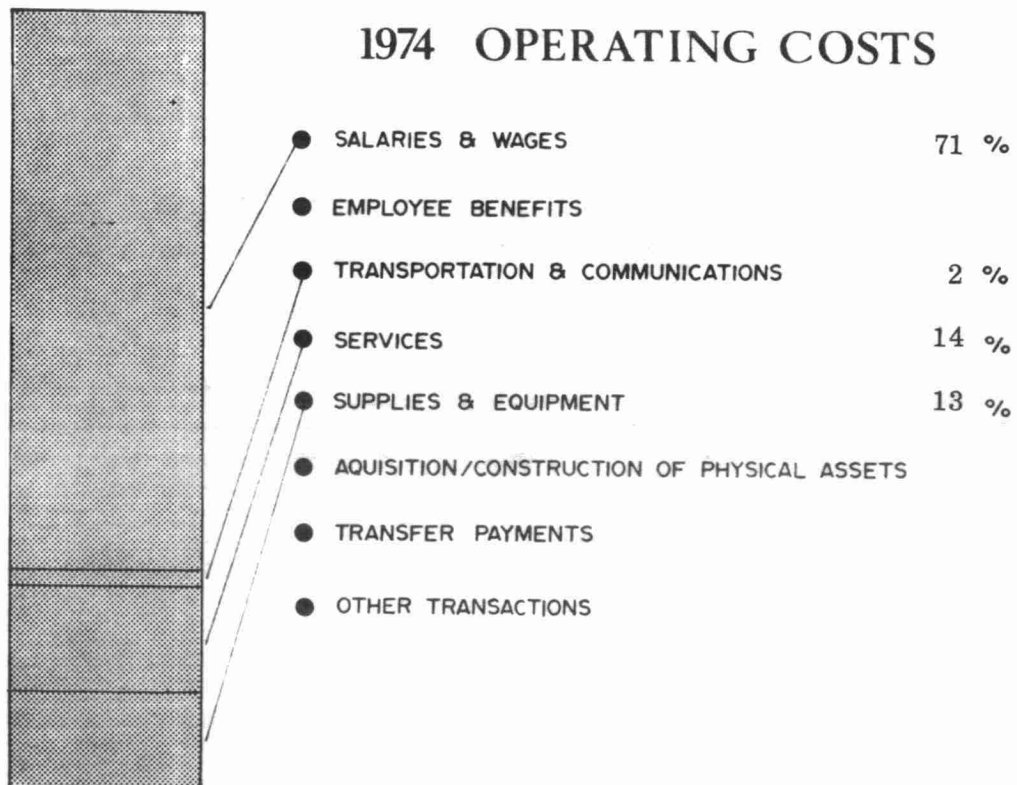
6" and 8" dia pipe

### PUMP

One Canada Pump 167 igpm @ 210' TDH

# ANNUAL COSTS

## 1974 OPERATING COSTS



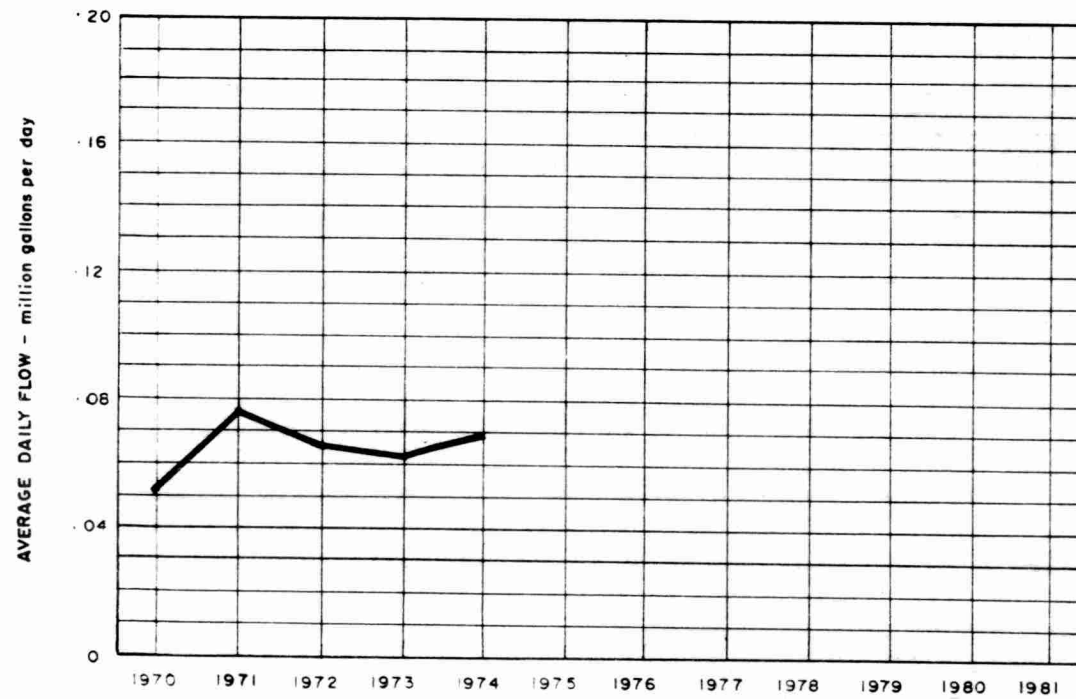
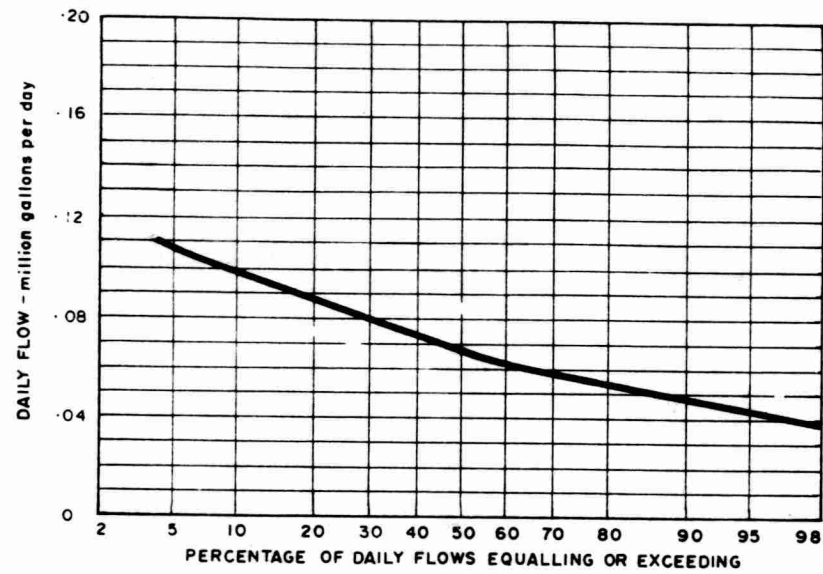
## YEARLY OPERATING COSTS

| YEAR | WATER TREATED<br>in million gallons | TOTAL<br>OPERATING COSTS | UNIT COSTS       |
|------|-------------------------------------|--------------------------|------------------|
|      |                                     |                          | cents /1000 gal. |
| 1974 | 26.5                                | 17,850                   | 67               |

# OPERATING EXPENDITURES

|  |             |          |
|--|-------------|----------|
| Regular Staff                                    | \$ 12673    | \$       |
| Casual (Unclassified) Staff                      |             |          |
| TOTAL SALARIES AND WAGES                         |             | 12673    |
| TOTAL EMPLOYEE BENEFITS                          |             |          |
| TOTAL TRANSPORTATION AND COMMUNICATIONS          |             | 299      |
| Insurance  | 117         |          |
| Sludge Haulage                                   |             |          |
| Repairs and Maintenance                          | 295         |          |
| Other Services                                   | 2113        |          |
| TOTAL SERVICES                                   |             | 2525     |
| Machinery and Equipment                          | 947         |          |
| Chemicals  | 1229        |          |
| Utilities  |             |          |
| Other Supplies and Equipment                     | 177         |          |
| TOTAL SUPPLIES AND EQUIPMENT                     |             | 2353     |
| TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS |             |          |
| TOTAL TRANSFER PAYMENTS                          |             |          |
| OTHER TRANSACTIONS                               |             |          |
| GRAND TOTAL                                      | GRAND TOTAL | \$ 17850 |

# PROCESS DATA FLOWS



DESIGN CAPACITY 0.25

## PLANT PERFORMANCE

| MONTH | FLOWS                                    |  |  | ALUM                     |                | CHLORINATION                              |                |  | TEMPERATURE    |                |
|-------|--|--|--|--------------------------|----------------|---|----------------|--|----------------|----------------|
|       | TOTAL<br>PLANT OUTPUT<br>million gallons | AVERAGE<br>DAILY FLOW<br>million gallons | MAXIMUM<br>DAY'S FLOW<br>million gallons | AMOUNT<br>USED<br>pounds | DOSAGE<br>mg/l | SODIUM<br>HYPOCHLORITE<br>USED<br>gallons | DOSAGE<br>mg/l | RESIDUAL<br>IN PLANT<br>EFFLUENT<br>mg/l | AVERAGE<br>° F | MAXIMUM<br>° F |
|       |  |  |  |                          |                |   |                |  |                |                |
| JAN   | 1.91                                     | .060                                     | .080                                     | 178                      | 9.3            | 46  | 2.9            | .5                                       | 28             | 28             |
| FEB   | 1.76                                     | .060                                     | .070                                     | 157                      | 8.9            | 44  | 3.1            | .5                                       | 28             | 28             |
| MAR   | 1.87                                     | .060                                     | .080                                     | 178                      | 9.5            | 53  | 2.8            | .5                                       | 28             | 28             |
| APR   | 1.88                                     | .060                                     | .080                                     | 174                      | 9.3            | 53  | 3.4            | .5                                       | 33             | 36             |
| MAY   | 1.99                                     | .060                                     | .090                                     | 206                      | 10.4           | 69  | 4.2            | .5                                       | 44             | 54             |
| JUNE  | 2.36                                     | .080                                     | .100                                     | 253                      | 10.7           | 90  | 4.6            | .5                                       | 62             | 66             |
| JULY  | 2.33                                     | .080                                     | .100                                     | 250                      | 10.8           | 90  | 4.6            | .5                                       | 63             | 72             |
| AUG   | 2.44                                     | .080                                     | .120                                     | 232                      | 9.5            | 87  | 4.3            | .5                                       | 66             | 70             |
| SEPT  | 2.53                                     | .080                                     | .100                                     | 223                      | 8.8            | 71  | 3.4            | .5                                       | 54             | 60             |
| OCT   | 2.95                                     | .100                                     | .170                                     | 176                      | 5.9            | 74  | 3.0            | .6                                       | 40             | 46             |
| NOV   | 2.42                                     | .080                                     | .110                                     | 101                      | 4.1            | 57  | 2.8            | .5                                       | 35             | 38             |
| DEC   | 2.07                                     | .070                                     | .110                                     | 77                       | 3.7            | 50  | 2.9            | .5                                       | 32             | 32             |
| TOTAL | 26.51                                    |  |  | 2205                     |                | 784                                       |                |  |                |                |
| AVG.  |  | .070                                     | .170                                     | 6 lb./day                | 8.4            | 2.1 lb/day                                | 3.5            | .5                                       | 43             | 72             |

## CHLORINATION and DISINFECTION

| MONTH | RAW WATER   |       |        |          |       | PLANT EFFLUENT                   |   | DISTRIBUTION SYSTEM              |   |
|-------|---|-------|--------|----------|-------|----------------------------------|---|----------------------------------|---|
|       | NUMBER OF SAMPLES HAVING<br>TOTAL COLIFORM ORGANISMS PER 100 ml<br>OF |       |        |          |       | NUMBER<br>OF<br>SAMPLES<br>TAKEN | NUMBER<br>HAVING<br>COLIFORM<br>ORGANISMS | NUMBER<br>OF<br>SAMPLES<br>TAKEN | NUMBER<br>HAVING<br>COLIFORM<br>ORGANISMS |
|       | 0   | 1 - 3 | 4 - 32 | 33 - 320 | > 320 |                                  |   |                                  |   |
| JAN   | 4   |       |        |          |       | 16                               | 0   | 0                                | 0   |
| FEB   |   |       |        |          |       |                                  | 0   | 0                                | 0   |
| MAR   | 3   |       |        |          |       | 12                               | 0   | 0                                | 0   |
| APR   | 4   |       |        |          |       | 16                               | 0   | 0                                | 0   |
| MAY   | 4   |       |        |          |       | 16                               | 0   | 0                                | 0   |
| JUNE  |   |       |        |          |       |                                  | 0   | 0                                | 0   |
| JULY  | 5   |       |        |          |       | 20                               | 0   | 0                                | 0   |
| AUG   | 2   |       | 1      |          | 1     | 16                               | 0   | 0                                | 0   |
| SEPT  |   |       | 2      |          |       | 12                               | 0   | 0                                | 0   |
| OCT   | 3   |       |        |          |       | 11                               | 1   | 0                                | 0   |
| NOV   | 2   |       |        | 1        |       | 12                               | 0   | 0                                | 0   |
| DEC   | 6   |       |        |          |       | 24                               | 0   | 0                                | 0   |
| TOTAL | 33  |       | 3      | 1        | 1     | 155                              | 1   | 0                                | 0   |
| AVG.  | 40  |       |        |          |       |                                  |   |                                  |   |



## WATER QUALITY

| PROPERTY                                       | RAW WATER         |         |         |         | TREATED WATER     |         |         |         | DESIRABLE STANDARDS |
|--|-------------------|---------|---------|---------|-------------------|---------|---------|---------|---------------------|
|  | NUMBER OF SAMPLES | AVERAGE | MAXIMUM | MINIMUM | NUMBER OF SAMPLES | AVERAGE | MAXIMUM | MINIMUM |                     |
| HARDNESS<br>in mg/l as $\text{CaCO}_3$         | 4                 | 50      | 60      | 44      | 4                 | 52      | 62      | 44      | 80 - 100            |
| ALKALINITY<br>in mg/l as $\text{CaCO}_3$       | 4                 | 36      | 42      | 30      | 4                 | 38      | 54      | 28      | 30 - 100            |
| IRON<br>in mg/l Fe                             | 4                 | .12     | .25     | .05     | 4                 | .25     | .75     | .05     | Less than 0.3       |
| CHLORIDE<br>in mg/l $\text{Cl}^-$              | 4                 | 6       | 7       | 5       | 4                 | 6       | 7       | 5       | Less than 250       |
| pH<br>in pH units                              | 4                 | 7.4     | 7.9     | 7.1     | 4                 | 7.4     | 8.2     | 6.8     | 7.0 - 8.5           |
| FLUORIDE<br>in mg/l $\text{F}^-$               |                   |         |         |         |                   |         |         |         | Less than 1.2       |
| COLOUR<br>in apparent units                    | 4                 | 18      | 20      | 15      | 4                 | 14      | 15      | 10      | Less than 0.5       |
| TURBIDITY<br>in FTU                            | 4                 | 2.3     | 3.6     | .75     | 4                 | 2.2     | 3.0     | 0.85    | Less than 1.        |
| CONDUCTIVITY<br>in micromhos per $\text{cm}^3$ | 4                 | 115     | 120     | 110     | 4                 | 117     | 125     | 114     |                     |

LABORATORY LIBRARY



\*96936000118513\*